

REMARKS

Claims 1, 3-14, 16-21 and 23-25 are now present in this application. Claims 1, 9 and 16 are independent. By this Amendment, dependent claims 23-25 are added to recite a device having a combination of features including a P-type substrate. Basis for the amendments is found throughout Applicant's originally filed disclosure including, for example, in paragraphs [030] and [033]. No new matter is involved. Applicants request reconsideration of this Application, as amended.

I. Rejections Under 35 U.S.C. §103

Claims 1, 3-6, 9-12 and 16-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 5,869,875 to Hebert in view of U.S. Patent 5,640,034 to Malhi. Further, claims 7, 8, 13, 14, 20 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Herbert in view Malhi and further in view of Applicant's allegedly "admitted prior art". These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

Because the rejection is based on 35 U.S.C. §103, what is in issue in such a rejection is "the invention as a whole," not just a few features of the claimed invention. Under 35 U.S.C. §103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains." The determination under §103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. See In re O'Farrell, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. See Medtronic, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

In rejecting claims under 35 U.S.C. § 103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. See, In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art

suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A showing of a suggestion, teaching, or motivation to combine the prior art references is an “essential evidentiary component of an obviousness holding.” C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not “evidence.” See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Moreover, it is well settled that the Office must provide objective evidence of the basis used in a prior art rejection. A factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. See, In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Furthermore, during patent examination, the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the Applicant is entitled to the patent. Only when a *prima facie* case is made, the burden shifts to the applicant to come forward to rebut such a case.

A rejection must be based on objective evidence of record, not merely conclusory statements of the Examiner. See, In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002). The Office cannot shift its burden of making a prima facie case of obviousness of the claimed invention by referring to unobvious or unexpected results or by speculating that a claimed feature is a mere design choice.

An Examiner may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis required to make a proper rejection under the statutes, See, In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968).

Hebert fails to disclose or suggest a number of positively recited features of the claimed invention, including (1) a first high density diffusion layer formed on the upper portion of the first polysilicon layer that fills the first trench in the source region, and (2) a second polysilicon layer filling a second trench formed between the N and P-type drift regions of the gate region such that the oxide film is deposited in the second trench as well as the upper portion of the drift region corresponding to the drain region.

In an attempt to remedy these deficiencies, the Office Action improperly attempt to shift the burden of proof from the Office to Applicant by citing case law that pertains to overlapping claimed ranges, a situation not presenting this Application.

Mere citation of the *Woodruff* decision or any other case as a basis for rejecting claims that differ from the prior art is improper, as it sidesteps the fact-intensive inquiry mandated by section 103. In other words, there are not "*Woodruff*" obviousness rejections," but rather only section 103 obviousness rejections.

The Office's method of analysis is founded on legal error because it substitutes supposed *per se* rules for the particularized inquiry required by section 103. It necessarily produces erroneous results. Established case law of the Court of Appeals for the Federal Circuit is grounded on the same analytic principle: namely, that section 103 requires a fact-intensive comparison of the claimed process with the prior art rather than the mechanical application of one or another *per se* rule. See *Pleuddemann*, 910 F.2d at 827, 15 USPQ2d at 1741 ("We repeat that the controlling law is in Section 103 of the statute, which must be applied to the facts of this case."); *Durden*, 763 F.2d at 1411, 226 USPQ at 362 ("Our function is to apply, in each case, Section 103 as written to the facts of disputed issues, not to generalize or make rules for other cases which are unforeseeable."); *Mancy*, 499 F.2d at 1292, 182 USPQ at 305 ("[T]he statutory standard of Section 103 for determining obviousness of an invention is whether in view of the prior art the invention as a whole would have been obvious at the time it was made."); *Kuehl*, 475 F.2d at 665, 177 USPQ at 255 ("The test of unobviousness is a statutory test and requires comparison of the invention with the prior art in each case. . . ."). As a consequence, these cases present applications of a unitary legal regime to different claims and fields of art to yield particularized results. Indeed, *Durden*, clearly states that there are no such *per se* rules of obviousness.

The use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention -- including all its limitations -- with the teachings of the prior art, flouts section 103 and the fundamental case law applying it. *Per se* rules that eliminate the need for fact-specific analysis of claims and prior art may be administratively convenient for PTO Examiners. But reliance on *per se* rules of obviousness is legally incorrect and must cease. Any such

administrative convenience is simply inconsistent with section 103, which, according to *Graham* and its progeny, entitles an applicant to issuance of an otherwise proper patent unless the PTO establishes that the invention *as claimed* in the application is obvious over cited prior art, based on the specific comparison of that prior art with claim limitations. Precedents of the Court of Appeals for the Federal Circuit do not establish any *per se* rules of obviousness, just as those precedents themselves expressly declined to create such rules. Any conflicts as may be perceived to exist derive from an impermissible effort to extract *per se* rules from decisions that disavow precisely such extraction. *In re Ochiai*, 37 USPQ2d 1127 (Fed. Cir. 1995).

To the extent that this Office Action seeks to include positively recited claimed features missing from Herbert that are not there simply by citing the *Woodruff* case instead of providing objective factual evidence of the existence of such features in the applied art, the rejection is fundamentally unsound and improper.

Additionally, the Office Action argues that “the [claimed] polysilicon layer is deemed equivalent.” Unfortunately, whether or not something is equivalent to something else does not, by itself, constitute proper evidence of obviousness of one thing in view of the equivalent thing. For example automobile drum brakes are equivalent to automobile disc brakes, but that fact alone does not constitute evidence that disc brakes are obvious in view of drum brakes, or *vice versa*. Applicant also notes that if the Office Action is somehow relying on what is known as the “doctrine of “equivalents” in patent law, that doctrine is only relevant to whether a claim is infringed, not whether something is obvious. Additionally, this allegation that because something is equivalent means that it is obvious is nothing more than another improper *per se* rule of unpatentability. Moreover, the Office Action fails to demonstrate that just because

something is recognized as being an equivalent of another thing that fact alone is objective factual evidence of proper motivation to modify a reference to achieve the alleged equivalent something.

Thus, the Office Action fails to provide a *prima facie* showing that the claimed first high density diffusion layer formed on the upper portion of the first polysilicon layer that fills the first trench in exists in the source region in Hebert, or that one of ordinary skill in the art would be properly motivated to provide the claimed first high density diffusion layer formed on the upper portion of the first polysilicon layer that fills the first trench in the source region in Hebert.

The Office Action then admits that Hebert does not disclose a second polysilicon layer filling a second trench formed between the N and P-type drift regions of the gate region such that the oxide film is deposited in the second trench as well as the upper portion of the drift region corresponding to the drain region. In an attempt to remedy this deficiency, the Office Action turns to Malhi, which discloses two transistors having a common drain that is located in a trench and, therefore are not individually isolated from one another – col. 2, lines 1-20. The Office Action concludes that it would be obvious to modify Hebert by incorporating a trench in the gate region as taught by Malhi to reduce the device's "on-resistance" as taught in col. 1, lines 32-34.

However, showings of proper motivation to modify one reference in view of another reference must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999). Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested

the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992).

In this case, the Office Action merely relies on the fact both Hebert and Malhi disclose LDMOS transistors, a fact that Applicants respectfully submit is nothing more than a broad conclusionary statement about both references that is not particular enough to motivate one of ordinary skill in the art to pick a specific feature from one such device and modify the other device based thereon. Moreover, this statement fails to mention a major shortcoming of both references as well the fact that Hebert and Malhi differ substantially for a number of reasons.

Firstly, both references have a major shortcoming with regard to the claimed invention. Both references fail to disclose a positively claimed feature of all claims, i.e., first and second trenches each filled with a polysilicon layer so, no matter how one modifies these two references, they cannot be combined to provide this positively recited combination of features that is missing from both references.

Secondly, there are significant differences between these two references that teach away from motivating one of ordinary skill in the art to modify Hebert, as suggested, in view of Malhi.

In this regard, Hebert – the base reference - discloses a lateral DMOS (LDMOS) using a P+doped substrate using primarily a lateral field device, has a characteristic P+ sinker, current flows laterally from drain to source, and the substrate or bottom source of the die is at ground potential. On the other hand, Malhi's lateral DMOS device uses an n+doped substrate, which is at a positive (not ground) potential, does not have a p+ sinker, current flows both laterally and vertically (col. 2, lines 47-48 of Malhi), and the substrate or bottom side of the die is a drain as well as shared drain 16. Applicant respectfully submits that these fundamental differences teach

away from modifying Hebert in view of Malhi, as suggested and notes that the Office Action completely fails to address these differences or explain why they would not teach away from the proposed combination of references that forms the basis of this rejection.

Thirdly, the Office Action fails to explain why one of ordinary skill in the art would be properly motivated to turn to Malhi to completely redesign Hebert by replacing Hebert's drain 20 with a trench drain for the proposed reason of reducing the on resistance," referencing col. 1, lines 32034 of Malhi, because (1) Malhi does not disclose that reduction of the on-resistance is due to its gate being in a trench. In this regard, note that (1) Malhi's prior art gate (in its Fig. 1) is in a trench already; and (2) Malhi discloses that the reduction of its on resistance is due to increasing the channel area for a given area of silicon (col. 2, lines 51-65) "by reducing cell pitch" (abstract, first sentence). In this regard, the Office Action fails to demonstrate that modifying Hebert's gate 20 by locating it in a trench will necessarily reduce cell pitch and achieve reduced on resistance in Hebert, or how it will affect the operation of Hebert, which has a p+ substrate and is operated differently electrically than is Malhi.

Also, Malhi completely fails to disclose redesigning a surface located gate to be a trench type gate to achieve improved on-resistance.

Furthermore, the Office Action has not demonstrated that one of ordinary skill in the art would be motivated to turn to Malhi to modify Hebert because Hebert has no disclosed need for a common gate feature, which is what Malhi is directed to.

Additionally, the Office Action's failure to explain why one of ordinary skill in the art would pick and choose only Malhi's gate feature on which to focus, instead of on the features

disclosed by Malhi to improve device performance, is evidence that this rejection is based solely on hindsight reconstruction of Applicant's invention based solely on Applicant's disclosure.

Moreover, even if one of ordinary skill in the art were properly motivated to modify Hebert in view of Malhi, as suggested, the resulting modification of Hebert would neither disclose, nor suggest, nor render obvious, the claimed combination of features recited in the rejected claims which include a first high density diffusion layer formed on the upper portion of the first polysilicon layer that fills the first trench in the source region.

Further, regarding claims 9 and 16, these claims recite a combination of features totally missing from both references, including the first high density diffusion layer formed in a portion of the source region including a portion of the first polysilicon layer filling a first trench in a source region in between the first trench and the gate region. The Office Action completely fails to provide objective factual evidence that such a feature is found anywhere in the applied references and, the attempt to shift the burden of establishing the existence of such a feature from the office to Applicant is completely improper, being based on an erroneous interpretation of the case law cited in the Office Action, and a theory of equivalents that has not been demonstrated to be relevant to providing a *prima facie* case of obviousness of the claimed invention.

Thus, the Office Action fails to make out a *prima facie* case of unpatentability of the claimed invention.

Reconsideration and withdrawal of this rejection of claims 1, 3-6, 9-12 and 16-19 are respectfully requested.

Regarding the rejection of claims 7, 8, 13, 14, 20 and 21 based on Herbert in view of Malhi and further in view of Applicant's allegedly "admitted prior art", the Office Action fails to make out a prima facie case of unpatentability of the claims from which claims 7, 8, 13, 14, 20 and 21 depend for reasons stated above. Moreover, no admission has been made by Applicant that Figures 1-3 qualify as statutory prior art usable in a rejection of the claims of the present application. Instead, Applicant has labeled Figures 1-3 as "Conventional Art" to distinguish Applicant's invention from that which is not Applicant's invention. If a drawing figure illustrates only material which is known to be statutory prior art to the invention, then the use of the phrase --Prior Art-- in the drawing figure would be proper. However, if it is not clear whether such material is statutory prior art, then the use of the phrase --Prior Art-- in the drawing figures would not be proper, and a label such as "Conventional Art" would be more appropriate to distinguish Applicant's invention from that which is not Applicant's invention.

Applicant has not admitted that Figures 1-3 and the associated description thereof in the specification are prior art to Applicant. In Fleming v. Giesa (BdPatApp&Int) 13 USPQ2d 1052 (7/17/1989), it was held that that for an admission to be used against a party, it must be clear, unequivocal and unmistakable. See also, Harner et al. v. Barron et al., 215 USPQ 743 (Comr Pats 1981), Suh v. Hoefle (BdPatApp&Int) 23 USPQ2d 1321 (4/30/1991), Issidorides v. Ley (BdPatApp&Int) 4 USPQ2d 1854 (4/2/1985) and Ex parte The Successor In Interest Of Robert S. McGaughey (BdPatApp&Int) 6 USPQ2d 1334 (3/4/1988).

All that Applicant has done is to refer to Figs. 1-3 as "Conventional Art." Something can be conventional art in the sense that it is practiced in the real world at the time of Applicant's filing of this Application and may yet not be prior art to Applicant in any sense.

Under the circumstances, i.e., where Applicant merely describes Figs. 1-3 as conventional art, the Office Action has not established that Applicant has made a clear, unequivocal and unmistakable admission on the record that what is disclosed in Figs. 1-3 and their associated description in Applicant's specification is prior art to Applicant. In this regard, the Examiner is also advised that the initial burden to establish something as prior art is on the Office as part of its burden of making out a *prima facie* case of unpatentability.

Accordingly, for at least these reasons, the Examiner has not met the required burden of presenting a *prima facie* case of obviousness, and the rejection must be withdrawn.

In addition, Applicants submit that claims 7, 8, 13, 14, 20 and 21 depend, either directly or indirectly, from independent claims 1, 9 and 16 which are allowable for the reasons set forth above, and therefore claims 7, 8, 13, 14, 20 and 21 are allowable based on their dependence from claims 1, 9 and 16. Reconsideration and allowance thereof are respectfully requested.

II. New Claims 23-25

Claims 23-25 have been added. These claims depend, respectively, from claims 1, 9 and 16 and are patentable because of the features of the claims from which they depend, and because of the claimed P-type substrate, which is not disclosed in the secondary applied reference, i.e., Malhi.

III. Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response

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has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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